



@ Mobile World Congress 2015
3rd - 4th March - Barcelona



Integrated care & wellbeing:

real implementation of innovative solutions combined to
bring a comprehensive service to populations

Natale Daniele Brunetti, Assistant Professor, MD, PhD, HD, FESC

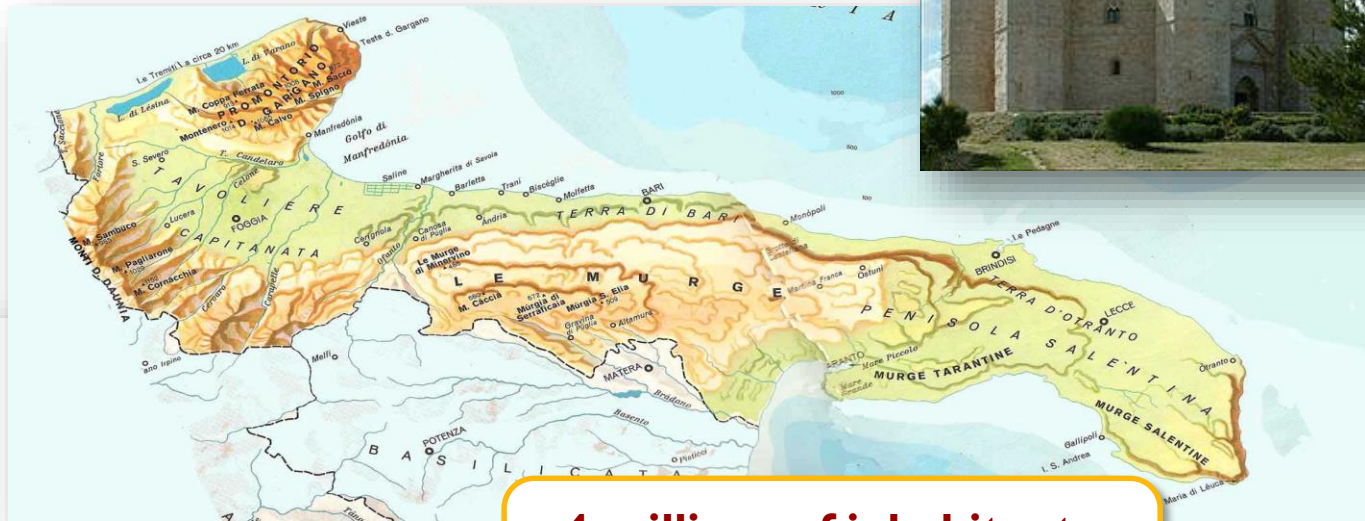
University of Foggia

Barcelona, March 4 2015



ardio On Line Europe
specialisti in telemedicina

Apulia: Italy



- 4 millions of inhabitants
- 450 km



Tele-cardiology service: how does it work

European Research in Telemedicine/ La Recherche Européenne en Télémédecine

Schem

Il servizio consente di eseguire un controllo elettrocardiografico

1. Un Cardiotelefono a 12 derivazioni standard mod. CardioVox P12 o Cardiolink, in dotazione agli Utenti del Servizio.

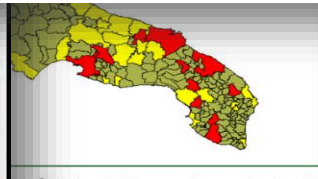
2. Un Telefono, fisso o mobile



4. L'Operatore, tramite il CardioVox P12 o Cardiolink, registra l'ECG al Paziente in 15 secondi.

5. L'Operatore, in 50 sec, trasmette via telefono l'ECG alla Centrale di Telecardiologia Cardio On Line Europe.

6. Il Cardiologo analizza e fornendo il consulto spedisce al Medico di Medicina di



8 km². Pre-hospital electrocardiograms via telemedicine per town October 2012 et septembre 2013.

TELECARDIOLOGIA-CARDIO ON LINE Europe s.r.l.

Pagina 1 of 1
Evento 1/1

Clinica/medico	Cod. clinica/medico	Nome	Cognome	Sexo	Età
118 TARANTO	PULSANO	A	V	Male	73

Referto	Cardiologo referante:	Firma:
	19 Dr. Michelangelo Sebastiani	<i>Michelangelo Sebastiani</i>



Ritmo: 25 mm/s - 10 mm/mV
CHIAM, Appareto: P12 P12-1
Registrato da: 99 99
Ricevuto il: 21/04/2009 20.48.23
Stampa: 03/08/2010

Telecardiology ECG showing signs of an inferior wall acute myocardial infarction.

Telecardiology support for public EMS

Aggiornamento OTTOBRE 2014
299 Utenti Serviti nella Regione Puglia

TELECARDIOLOGIA per il 118 NELLA REGIONE PUGLIA

Attività dall'11 Ottobre 2004 al 31 Gennaio 2015

ECG refertati nel mese di Gennaio 2015: **13.048**



>421 calls/day

1 every 3 minutes

769.249 ECG

REFERATI IN TEMPO REALE CON
CONSULENZA CARDIOLOGICA ON LINE

Brunetti et al.

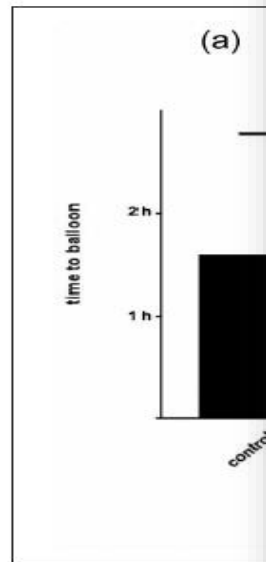


Figure 2. Time from laboratory entrance

6

European Heart Journal: Acute Cardiovascular Care

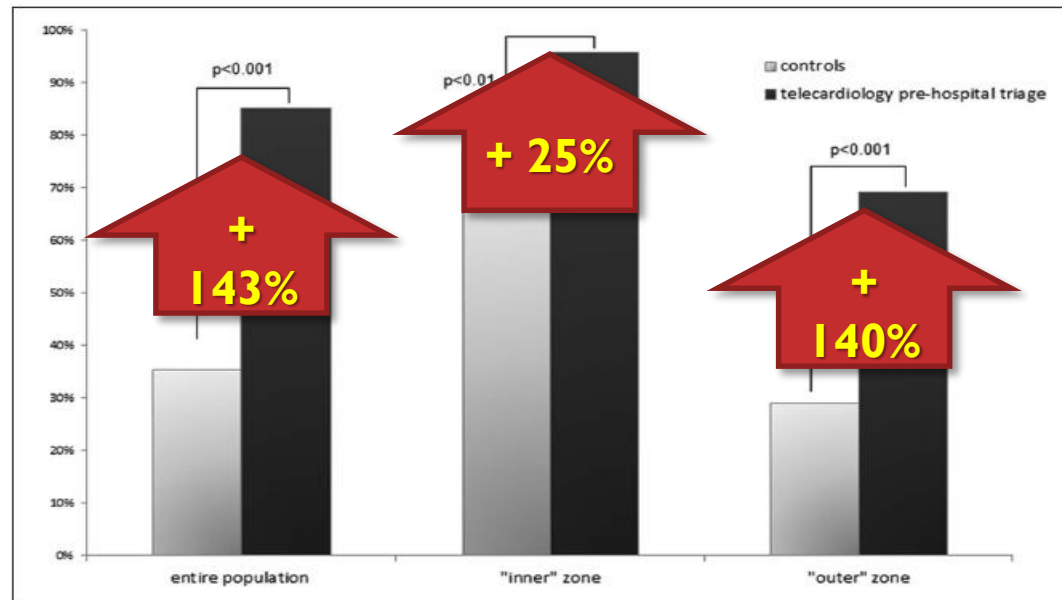


Figure 3. Rates of subjects treated within 1 h after first electrocardiogram (ECG) diagnosis of ST-elevation myocardial infarction (STEMI).

Available online at www.sciencedirect.com

ScienceDirect

International Journal of Cardiology 176 (2014) 1257–1258

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard



Letter to the Editor

YOUng Football Italian amateur players Remote electrocardiogram Screening with Telemedicine (YOU FIRST) study: Preliminary results

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Quality and Outcomes

Prehospital Telemedicine Electrocardiogram Triage for a Regional Public Emergency Medical Service: Is It Worth It? A Preliminary Cost Analysis

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Background: Telemedicine has been shown to improve quality of health medicine; its cost-effectiveness, however, is still a matter of debate.
Hypothesis: Pre-hospital telemedicine electrocardiogram triage for regional emergency medical service (EMS; dialing 1-1-8) during 2012 and under a telemedicine electrocardiogram (ECG) in the case of suspected acute syndrome, arrhythmia). The prehospital ECGs were read by a remote cardiologist associated with this method were calculated by subtracting the cost of pre-hospital support from the cost of conventional emergency department triage (ECG at ED).
Results: During 2012, the regional EMS performed 109 750 ECGs by telemedicine. The cost for the regional health-care system was €1 833 333, with a €16.70 cost per ECG. The cost of similar conventional emergency department treatment from a regional EMS was €8.10 to €38.40 per ECG/consultation (total savings, €1 833 333 - €8.10 = €1 825 233). The cost for ruling out an acute cardiac disease was €25.30; for a prehospital diagnosis of ST-elevation myocardial infarction (STEMI), the cost was €49.20. With 629 prehospital diagnoses of ST-elevation myocardial infarction, the regional EMS saved €25 500. The regional EMS saved €25 500 in costs thanks to prehospital diagnosis deduced from prior studies, 69 lives were saved with a cost per quality-adjusted life year gained of €1927, €990/€ - 2508.
Conclusions: Prehospital EMS triage with telemedicine ECG in patients with suspected acute syndrome may reduce health-care costs.

Introduction

A growing burden of costs is bearing down upon health-care systems in developed countries,¹⁻⁴ becoming progressively less and less sustainable⁵⁻⁸ in present international crisis scenarios. Cardiovascular disease (CVD) is one of the leading causes of death, hospitalization, and health-care expenditures in Western countries.⁹⁻¹² Several strategies have been proposed for the reduction of health-care costs.¹³⁻¹⁷

It is still a matter of debate whether telemedicine implementation may reduce health-care costs.^{18,19} Prehospital

triage with electrocardiogram (ECG) support²⁰⁻²² is recognized as a telemedicine in acute CVD. We therefore report on the results of a study from implementation supporting the public 1-1-8, the local analog of the 911 system, for 4 million inhabitants in the region of Apulia (Bari, Italy) (Cardio On Line Europe S.R.L. telemedicine service).

Methods

An economic evaluation from the perspective

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Table 1. Costs and Savings Calculated With Implementation of Telemedicine Prehospital Triage for Public EMS 1-1-8 in Apulia, Italy (N = 109 750)

	N	Telemedicine Triage	ED Triage	
			Min	Max
Total cost		1 833 333	2 725 093	6 052 713
Total savings, min		891 760		
Total savings, max		4 219 380		
Savings per patient, min		8		
Savings per patient, max		38		
Presumed STEMI patients saved per y, n	68.56			
Presumed cost per STEMI QALY saved		1927		
Presumed cost per STEMI QALY saved, min		990		
Presumed cost per STEMI QALY saved, max		-2508		
Presumed savings per STEMI QALY saved, min		64 257		
Presumed savings per STEMI QALY saved, max		304 034		
Cost per acute CVD diagnosed prehospital		49		
Cost per excluded acute CVD diagnosed prehospital		25		

Abbreviations: CVD, cardiovascular disease; ED, emergency department; EMS, emergency medical service; max, maximum; min, minimum; QALY, quality-adjusted life year; STEMI, ST-elevation myocardial infarction.

Unless otherwise noted, values are in euros (€) and have been rounded to the nearest euro.

Conclusions

- telemedicine may facilitate the delivery of high quality health care wherever and for whoever is needed
- telemedicine may reduce health care costs